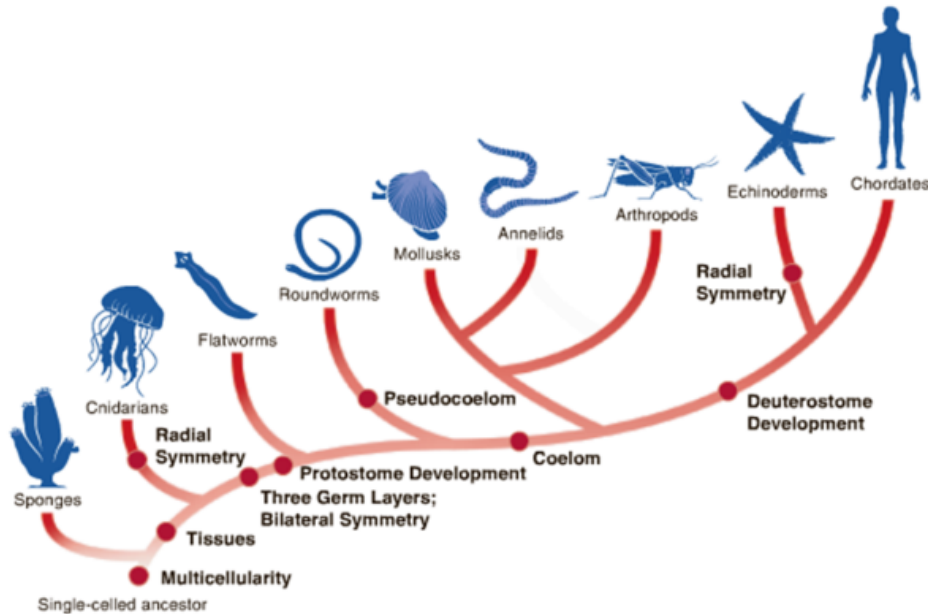


9 milestones in animal evolution



General Characteristics and Functions

All animals share the following characteristics

- Multicellular
- Eukaryotic
- Heterotrophs
- cell membrane, no cell wall

Essential Functions

Animals carry out seven (7) essential functions

Feeding	Response
Respiration	Movement
Circulation	Reproduction
Excretion	

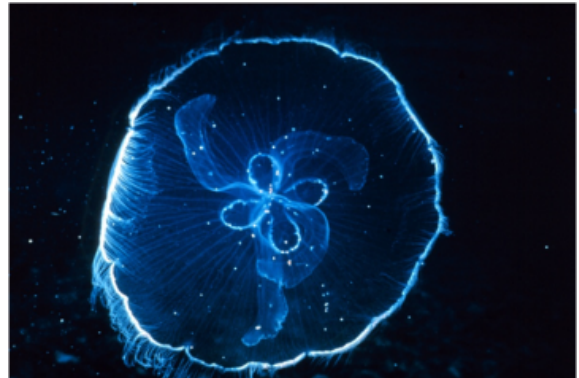
1. Multicellularity

- An organism that has many cells.
- Example organisms: Sponges



2. Tissues

- A group of specialized cells with a common structure and function.
- Example: Cnidarians
 - (Jellyfish)
 - (Corals)
 - (Anemones)



3. Bilateral Symmetry

- Animal configuration with left and right halves that mirror each other.
- Example: Flatworms
 - (Flukes)
 - (Tapeworms)



4. Body Cavity

Fluid-filled opening

- Example: Roundworms
- (Hookworms)
- (Pinworms)



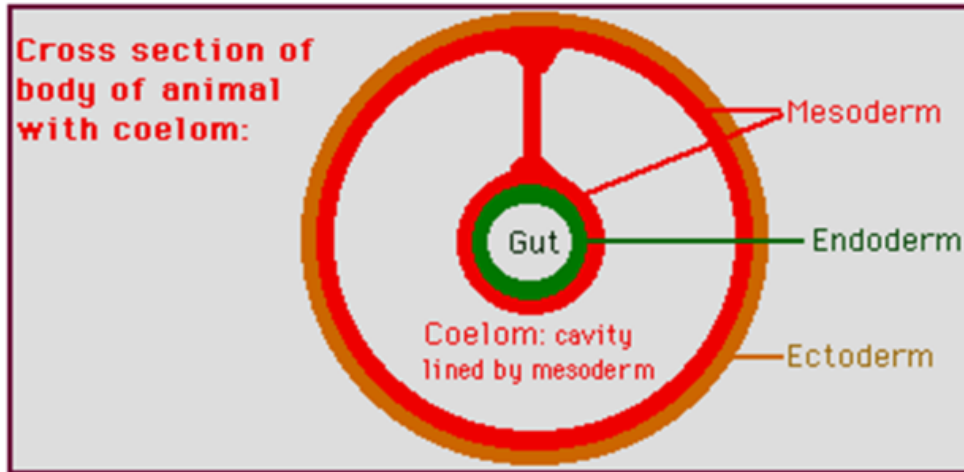
5. Coelom

The fluid-filled body cavity that forms within the mesoderm. A better body cavity.

- Example: Mollusks
- (Clams)
- (Octopus)
- (Squid)
- (Snails)



Coelom



6. Segmentation

Body plan based on segments.

- Example: Annelids
- (Earthworms)
- (Leeches)



7. Jointed Appendages

Jointed limbs

Limbs that have many parts

- Example: Arthropods
- (Insects)
- (Crabs)
- (Arachnids)
- (Barnacles)
- (Shrimp)



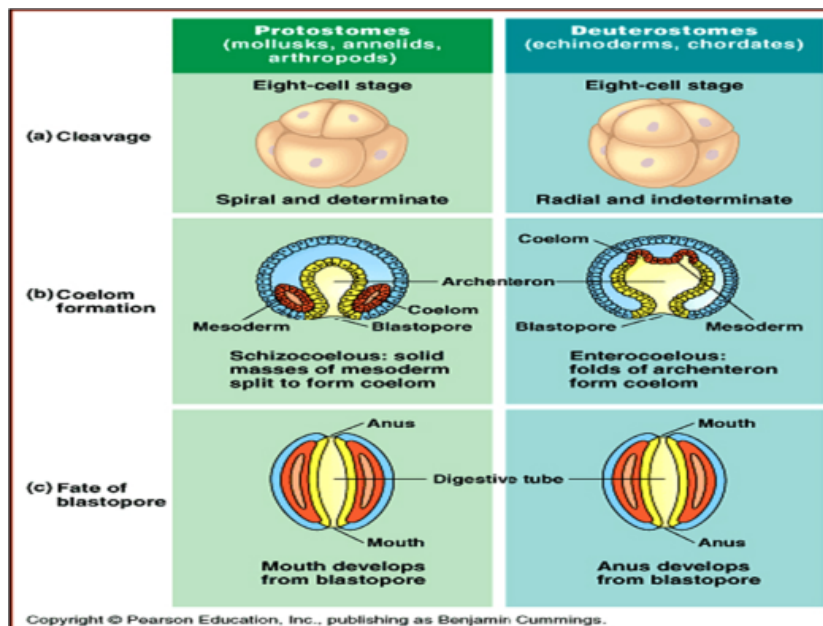
8. Deuterostomes

An animal whose mouth forms from an opening other than the blastopore

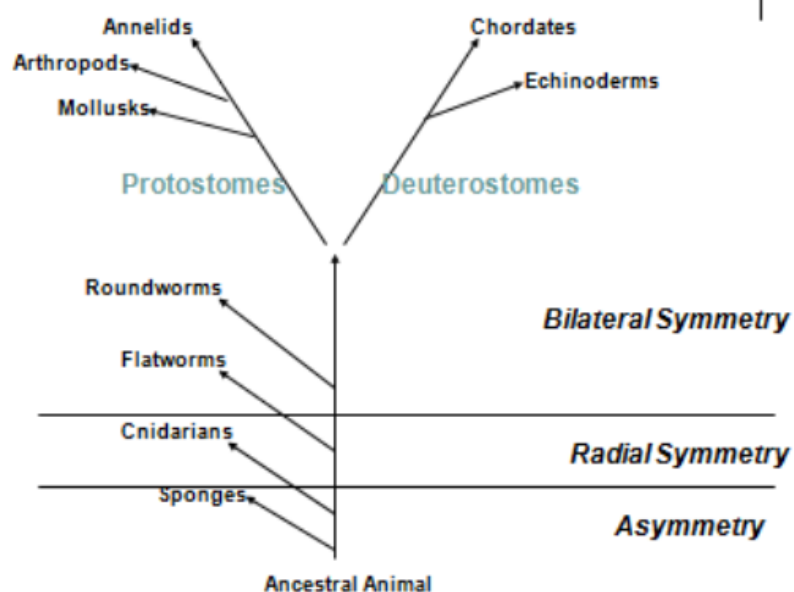
- Example: Echinoderms
- (Sea Stars)
- (Sea Urchins)
- (Sea Cucumbers)
- (Sand Dollars)



Protostomes v. Deuterostomes



Evolution of Invertebrates



9. Notocord

A dorsal rod-like structure that runs the length of the body and serves as the internal skeleton.

- Example: Chordates
- (Fish, Sharks, Rays)
- (Mammals, including Humans)
- (Reptiles)
- (Birds)
- (Amphibians)

